OKLAHOMA 29 HUGHES

FIELD APPRAISAL ANALYSIS

Prepared by
Program Analyst
Office of the Administrator
U.S. RURAL ELECTRIFICATION ADMINISTRATION

Field Appraisal
Completed in
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Program Analyst
Office of the Administrator

ANALYSIS OF BASIC FACTORS RELATED TO THE RURAL ELECTRIFICATION LOAN FOR OKLAHOMA 29 HUGHES

SUMMARY

1. A recent unelectrified farm survey made of the service area by the Canadian Valley Electric Cooperative, Inc., indicated that the ultimate system would contain a total of 8,255 consumers.

2. Data obtained from respondents in the survey indicated that served farm consumers expected to use an average of 1,731 kwh annually (144 per month) within three years after the field appraisal and that nonfarm consumers indicated they would use 1,259 kwh (105 per month). For 1950 the cooperative reported an average of 77 kwh per month for farm and nonfarm consumers combined.

3. Competition from liquid petroleum and natural gas is without question the greatest single deterrent to the use of more electrical appliances and a larger energy load among consumers of this system. Eighty-four percent of the served nonfarm consumers and 63 percent of served farm consumers are presently using liquid petroleum or natural gas for one or more appliances.

4. Farm tenancy has been relatively high in this area and many landlords are more interested in the income received from oil and gas than from agricultural produce. These factors have had an unfavorable effect on the maintenance of a sound agriculture through preservation of the land.

5. There has been an increase in the number of dairy and poultry farms in this area which should result in greater consumption of electricity.

6. Oil companies have discovered that the use of electricity for oil well pumping is an economical means of pumping oil from the ground.

7. Related Economic Factors

During the decade 1940 to 1950 there has been a decrease of nearly 28 percent in population within the cooperative's area. During the same period, rural population decreased more than 40 percent. This area has lost population over this period at a greater rate than any other area in the United States. In spite of the decreasing population, dwelling units in this area increased by 13 percent. Farms in this area averaged 166 acres in 1950. The average value of land and buildings for farms in this area in 1950 was about $5,700, or nearly 80 percent higher than 1945. Although cotton has been one of the chief sources of income in this area in the past, the trend is toward dairying, beef cattle, and poultry. The production of peanuts has grown to the point where it rivals cotton as a leading cash crop. The average cash income per farm

for 1944 was about $1,300, as compared with about $1,450 for 1949 or an increase of 14 percent. There is little opportunity for off-farm employment in this area. Credit facilities for farmers appear sufficient. Oil and gas resources provide a large part of the income to this area generally, and there is no indication that this condition will not prevail for some time to come.

E. C. Weitzell, Program Analyst
Office of the Administrator

I. LOCATION

The service area of the Canadian Valley Electric Cooperative, Inc., is located in the east central part of Oklahoma. (See Map, Figure I). It includes all of Pottawatomie County, most of Seminole County, and about one-third each of Lincoln, Okfuskee, Hughes and McIntosh Counties. A few members across the line in Oklahoma County are also served. The headquarters office is located in Seminole, Oklahoma.

II. SOURCE OF DATA USED IN THIS ANALYSIS

The local information providing the basis for this analysis was provided by a field appraisal conducted by Arthur S. Hiatt, Agricultural Economist, Office of the Administrator. The field appraisal, which was completed in September 1951, covered all of the area the cooperative expects to serve insofar as was known at the time.

The general information and data contained in this analysis were obtained primarily from the Census of Agriculture, and pertain to Pottawatomie, Seminole, Hughes, Lincoln, McIntosh and Okfuskee Counties, Oklahoma.

III. ESTIMATED KWH CONSUMPTION TO BE ATTAINED WITHIN THREE YEARS ACCORDING TO CONSUMER CLASS

A. Procedure

The basis for the estimates of future kwh consumption is an appliance survey made as a part of the field appraisal. Rural respondents were selected by means of a block-type geographical sample taken at random. One section per township was selected, making a sample of about three percent of the area. Key maps submitted with the system's loan application were used in selecting the sample. The appraiser called at each establishment in the sample area and was able to obtain a complete and usable interview schedule (Form AL-76R) from each (or a substitute in the few cases were it was necessary).

The data obtained by the interviews were tabulated and the percentage of appliance density in relation to all served consumers in the sample was calculated. The average kwh consumption per 100 served

farm and nonfarm consumers was computed as the summation of the respective appliance densities per 100 consumers, and their average annual energy requirements.

B. Findings

Table I summarizes the estimated consumption by class of consumers and includes related data for comparative purposes.

The data obtained from respondents indicated that the served farm consumers expect to use an average of 1,731 kwh annually (144 per month) within three years after the field appraisal. (See Table II). The served nonfarm consumers interviewed in the sample indicated they expect to use 1,259 kwh annually (105 per month) within the next three years. (See Table III).

According to the system's billing record data for 1950, the actual average consumption of the 75 served farm consumers in the sample and the 24 served nonfarm consumers was about 77 kwh per month. However, according to the annual average kwh usage per appliance as determined by REA, these consumers with their present appliances, should have been using about 94 kwh per month. It is apparent from this study the served consumers are not using their appliances and equipment to the extent which has been found to prevail throughout the country. With proper education, it is possible that the use of electric power can be increased through the addition of appliances and equipment not now contemplated, and by the increased use of those they have now.

If consumers continue to use appliances at lower rates than REA average usage, the average consumption that may be expected to be reached within three years will be as much as 15 percent below the estimates given above.

TABLE I
SUMMARY OF CONSUMPTION STATISTICS

	Farm	Nonfarm	Farm and Nonfarm Combined
1. Estimated average monthly kwh consumption. 1/			
a. To be attained in 1 year	124	82	114
b. To be attained in 3 years	144	105	135
c. Additional kwh within 3 years resulting from planned purchases of appliances and equipment.	50	27	45
d. Present usage.	94	78	90
2. Actual average monthly kwh consumption in 1950. 2/	3/	3/	77
3. Estimated percent of consumers not planning to add appliances and equipment within 3 years.	33	46	36
4. Percent of estimated total kwh load to be attained in 3 years of the electrical energy used to operate household appliances including lighting and home pressure systems. 1/	86	89	87
5. Estimated percent of consumers in first and second blocks of rate schedule. 4/			
a. At present	36	50	39
b. At the end of 1 year	24	50	30
c. At the end of 3 years	20	37	24

1/ Source: Field appraisal completed in September 1951. Assumes annual average kwh usage as determined by REA for all appliances and equipment in service, or to be added.

2/ Source: Obtained from billing records of the system.

3/ The billing records of the system make no distinction between farm and nonfarm consumers. Those reported merely as "farm" were interpreted as comparable to "combined farm and nonfarm."

4/ First 35 kwh for first rate block and next 35 kwh for second rate block.

TABLE II

PERCENT OF SERVED FARM CONSUMERS USING AND PLANNING TO USE ELECTRICAL APPLIANCES AND EQUIPMENT, AND ESTIMATED ANNUAL KWH USAGE PER 100 FARM CONSUMERS TO BE ATTAINED WITHIN THREE YEARS AFTER THE DATE OF THE FIELD APPRAISAL

Appliance or Equipment	Percent of Consumers Using	Percent of Consumers Planning to Use In One Year	Percent of Consumers Planning to Use In Three Years	Percent of Consumers Using and Planning to Use 1/	Annual kWh Usage Per Unit 2/	Estimated Annual kWh Usage per 100 Farm Consumers: Present Use	Future Use In One Year	Future Use In Three Years	Total Estimated Future Use 3/
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MAJOR USES:									
House Lighting	100.0	—	—	100.0	240	24,000	—	—	24,000
General Barn Lighting	14.7	8.0	8.0	22.7	24	353	192	192	545
Dairy Barn Lighting	8.0	—	—	8.0	35	280	—	—	280
Poultry Laying House Lighting	8.0	4.0	4.0	12.0	35	280	140	140	420
Yard Lighting	56.0	13.3	13.3	69.3	18	1,008	239	239	1,247
Iron	94.7	1.3	2.6	97.3	100	9,470	130	260	9,730
Ironer	2.7	1.3	1.3	4.0	120	324	156	156	480
Radio	84.0	5.3	5.3	89.3	100	8,670	670	670	9,340
Refrigerator	68.0	12.0	14.7	82.7	360	24,480	4,320	5,292	29,772
Range	4.0	2.7	4.0	8.0	1,200	4,800	3,240	4,800	9,600
Washing Machine	52.0	4.0	5.3	57.3	35	1,820	140	186	2,006
Pressure System Lift 22' or Less	2.7	—	—	2.7	180	486	—	—	486
Pressure System Lift over 22'	24.0	18.7	28.0	52.0	240	5,760	4,488	6,720	12,480
Space Heater (Supplementary)	2.7	—	—	2.7	70	189	—	—	189
Freezer (Cabinet)	9.3	4.0	16.0	25.3	900	8,370	3,600	14,400	22,770
Television Receiver	8.0	2.7	2.7	10.7	360	2,880	972	972	3,852
Water Heater	—	5.3	8.0	8.0	3,000	—	15,900	24,000	24,000
Brooder Hover	12.0	—	2.7	14.7	116	1,392	—	313	1,705
Milking Machine	2.7	—	—	2.7	320	864	—	—	864
Milk Cooler	4.0	—	—	4.0	1,367	5,468	—	—	5,468
Water Heater (Pail)	1.3	—	—	1.3	300	390	—	—	390
OTHER LIGHTING:									
Hog Barn	1.3	—	—	1.3	3	4	—	—	4
Poultry Brooder House	6.7	1.3	2.6	9.3	5	34	6	12	46
Milk House	1.3	—	—	1.3	35	46	—	—	46
Garage	8.0	1.3	1.3	9.3	8	64	10	10	74

APPLIANCE OR EQUIPMENT	PERCENT OF CONSUMERS USING: (1)	PERCENT OF CONSUMERS PLANNING TO USE IN ONE YEAR: (2)	PERCENT OF CONSUMERS PLANNING TO USE IN THREE YEARS: (3)	PERCENT OF CONSUMERS USING AND PLANNING TO USE 1/: (4)	ANNUAL KWH USAGE PER UNIT 2/: (5)	ESTIMATED ANNUAL KWH USAGE PER 100 FARM CONSUMERS: PRESENT USE (6)	FUTURE USE: IN ONE YEAR (7)	FUTURE USE: IN THREE YEARS (8)	TOTAL ESTIMATED FUTURE USE 3/: (9)
OTHER LIGHTING: (CONTINUED)									
SHOP	5.3	1.3	1.3	6.6	12	63	16	16	79
CAVE OR SPRING HOUSE	1.3	—	—	1.3	5	6	—	—	6
OTHER BUILDINGS	17.3	—	—	17.3	12	208	—	—	208
OTHER HOUSEHOLD USES:									
SEWING MACHINE	8.0	2.7	5.4	13.4	10	80	27	54	134
HOUSEHOLD FAN	40.0	6.7	6.7	46.7	15	660	100	100	760
EXHAUST FAN (KITCHEN)	1.3	—	—	1.3	15	20	—	—	20
VENTILATOR (WINDOW)	4.0	2.7	2.7	6.7	50	200	135	135	335
VENTILATOR (ATTIC)	1.3	—	—	1.3	100	130	—	—	130
VACUUM CLEANER	16.0	2.7	4.0	20.0	20	320	54	80	400
HEATING PAD	8.0	—	—	8.0	3	24	—	—	24
CENTRAL HOT AIR CIR. FAN	1.3	—	—	1.3	240	312	—	—	312
HOT PLATE	5.3	—	—	5.3	70	371	—	—	371
PERCOLATOR	6.7	—	—	6.7	60	402	—	—	402
ROASTER	4.0	1.3	1.3	5.3	480	1,920	624	624	2,544
TOASTER	34.6	1.3	1.3	35.9	35	1,214	46	46	1,260
WAFFLE IRON	21.3	—	—	21.3	25	532	—	—	532
FOOD MIXER	20.0	1.3	1.3	21.3	25	500	32	32	532
CLOCK	29.3	—	—	29.3	18	599	—	—	599
EVAPORATIVE COOLER	4.0	—	1.3	5.3	72	288	—	94	382
CHURN	2.7	1.3	1.3	4.0	3	8	4	4	12
CREAM SEPARATOR	8.0	1.3	1.3	9.3	35	280	46	46	326
OTHER WATER PUMPING:									
LIVESTOCK WATERING	14.7	2.7	4.0	18.7	180	2,646	486	720	3,366
GARDEN WATERING	2.7	1.3	1.3	4.0	75	202	98	98	300
OTHER FARM SHOP:									
AIR COMPRESSOR	1.3	—	—	1.3	35	46	—	—	46
DRILL PRESS	1.3	—	—	1.3	12	16	—	—	16
TOOL GRINDER	2.7	—	—	2.7	25	68	—	—	68
POWER SAW	6.7	—	—	6.7	12	80	—	—	80
SOLDERING IRON	2.7	—	—	2.7	15	40	—	—	40

TOTAL ESTIMATED ANNUAL KWH USAGE PER 100 SERVED FARM CONSUMERS	112,667	35,871	60,411	173,078
ANNUAL KWH USAGE PER CONSUMER	1,127	359	604	1,731
MONTHLY KWH USAGE PER CONSUMER	94	30	50	144

SOURCE: FIELD APPRAISAL COMPLETED IN SEPTEMBER 1951.

1/ PERCENT OF ALL SERVED FARM CONSUMERS WHO WERE USING OR PLANNING TO USE ELECTRICAL APPLIANCES AND EQUIPMENT LISTED, WITHIN THREE YEARS AFTER THE FIELD APPRAISAL AS INDICATED BY INTERVIEWS WITH 75 RESPONDENTS, COMPRISING A THREE PERCENT RANDOM GEOGRAPHICAL (BLOCK-TYPE) SAMPLE.

2/ ANNUAL KWH AVERAGE USAGE AS DETERMINED BY REA. ANNUAL DATA USED TO ACCOUNT FOR SEASONAL VARIATIONS.

3/ THE TOTAL ESTIMATED ANNUAL KWH USAGE SHOWN IN THIS COLUMN DOES NOT NECESSARILY EQUAL COLUMN 5 TIMES COLUMN 4. SOME CONSUMERS HAVE MORE THAN ONE OF A PARTICULAR APPLIANCE, OR MORE THAN ONE OF SEVERAL DIFFERENT APPLIANCES.

TABLE III

PERCENT OF SERVED NONFARM RESIDENTIAL CONSUMERS USING AND PLANNING TO USE ELECTRICAL APPLIANCES AND EQUIPMENT AND ESTIMATED ANNUAL KWH USAGE PER 100 NONFARM RESIDENTIAL CONSUMERS WITHIN THREE YEARS AFTER THE DATE OF THE FIELD APPRAISAL

APPLIANCE OR EQUIPMENT	PERCENT OF CONSUMERS USING:	PERCENT OF CONSUMERS PLANNING TO USE IN ONE YEAR	PERCENT OF CONSUMERS PLANNING TO USE IN THREE YEARS	PERCENT OF CONSUMERS USING AND PLANNING TO USE 1/	ANNUAL KWH USAGE PER UNIT 2/	ESTIMATED ANNUAL KWH USAGE PER 100 FARM CONSUMERS: PRESENT USE	FUTURE USE IN ONE YEAR	FUTURE USE IN THREE YEARS	TOTAL ESTIMATED FUTURE USE 3/
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MAJOR USES:									
HOUSE LIGHTING	100.0	—	—	100.0	240	24,000	—	—	24,000
YARD LIGHTING	4.2	4.2	4.2	8.4	18	75	75	75	150
IRON	91.7	—	—	91.7	100	9,583	—	—	9,583
RADIO	83.3	8.3	8.3	91.6	100	9,583	833	833	10,416
REFRIGERATORS	66.7	—	—	66.7	360	25,498	—	—	25,498
RANGE	—	—	4.2	4.2	1,200	—	—	5,004	5,004
WASHING MACHINE	41.7	4.2	4.2	45.9	35	1,458	146	146	1,604
PRESSURE SYSTEM - LIFT OVER 22'	8.3	8.3	12.5	20.8	240	1,999	1,999	3,000	4,999
FREEZER (CABINET)	8.3	—	20.8	29.1	900	7,497	—	18,747	26,244

APPLIANCE OR EQUIPMENT	PERCENT OF CONSUMERS USING (1)	PERCENT OF CONSUMERS PLANNING TO USE IN ONE YEAR (2)	PERCENT OF CONSUMERS PLANNING TO USE IN THREE YEARS (3)	PERCENT OF CONSUMERS USING AND PLANNING TO USE 1/ (4)	ANNUAL KWH USAGE PER UNIT 2/ (5)	ESTIMATED ANNUAL KWH USAGE PER 100 FARM CONSUMERS: PRESENT USE (6)	FUTURE USE IN ONE YEAR (7)	FUTURE USE IN THREE YEARS (8)	TOTAL ESTIMATED FUTURE USE 3/ (9)
MAJOR USES: (CONTINUED)									
TELEVISION RECEIVER	——	4.2	12.5	12.5	360	——	1,501	4,500	4,500
BROODER HOVER	4.2	——	——	4.2	36	150	——	——	150
OTHER LIGHTING:									
GARAGE	4.2	——	——	4.2	8	33	——	——	33
OTHER BUILDINGS	16.7	——	——	16.7	12	200	——	——	200
FARM SHOP:									
DRILL PRESS	8.3	——	——	8.3	12	100	——	——	100
POWER SAW	8.3	——	——	8.3	12	100	——	——	100
OTHER HOUSEHOLD USES:									
SEWING MACHINE	8.3	4.2	4.2	12.5	10	83	42	42	125
HOUSEHOLD FAN	54.2	——	——	54.2	15	938	——	——	938
EXHAUST FAN (KITCHEN)	4.2	——	——	4.2	15	63	——	——	63
VENTILATOR (WINDOW)	20.8	4.2	4.2	25.0	50	1,458	208	208	1,666
VACUUM CLEANER	41.7	8.3	8.3	50.0	20	833	167	167	1,000
HEATING PAD	25.0	——	——	25.0	3	88	——	——	88
PERCOLATOR	20.8	——	——	20.8	60	1,250	——	——	1,250
ROASTER	4.2	——	——	4.2	480	3,984	——	——	3,984
TOASTER	37.5	——	——	37.5	35	1,312	——	——	1,312
WAFFLE IRON	25.0	4.2	4.2	29.2	25	625	104	104	729
FOOD MIXER	25.0	8.3	8.3	33.3	25	625	208	208	833
CLOCK	25.0	——	——	25.0	18	450	——	——	450
EVAPORATIVE COOLER	12.5	——	——	12.5	72	900	——	——	900
TOTAL ESTIMATED ANNUAL KWH USAGE PER 100 SERVED NONFARM RESIDENTIAL CONSUMERS						92,885	5,283	33,034	125,889
ANNUAL KWH USAGE PER CONSUMER						929	53	330	1,259
MONTHLY KWH USAGE PER CONSUMER						78	4	27	105

SOURCE: FIELD APPRAISAL COMPLETED IN SEPTEMBER 1951.

1/ PERCENT OF ALL SERVED NONFARM RESIDENTIAL CONSUMERS WHO WERE USING OR PLANNING TO USE ELECTRICAL APPLIANCES AND EQUIPMENT LISTED, WITHIN THREE YEARS AFTER THE FIELD APPRAISAL AS INDICATED BY INTERVIEWS WITH 24 RESPONDENTS COMPRISING A THREE PERCENT RANDOM GEOGRAPHICAL (BLOCK-TYPE) SAMPLE.

2/ ANNUAL KWH AVERAGE USAGE AS DETERMINED BY REA. ANNUAL DATA USED TO ACCOUNT FOR SEASONAL VARIATIONS.

3/ THE TOTAL ESTIMATED ANNUAL KWH USAGE SHOWN IN THIS COLUMN DOES NOT NECESSARILY EQUAL COLUMN 5 TIMES COLUMN 4. SOME CONSUMERS HAVE MORE THAN ONE OF A PARTICULAR APPLIANCE, OR MORE THAN ONE OF SEVERAL DIFFERENT APPLIANCES.

C. Conditions in the Area Favorable to Increased Use of Electricity

This cooperative has a home electrification adviser. At the time of the field appraisal, the officials were considering employing an agricultural engineer to aid in the power use and member education program, as well as a person to develop further use of electricity in rural industries, particularly for oil well pumping and related uses. The present electrification adviser is a home economist. She meets with farm groups to demonstrate the approved use of farm household electrical equipment. When electric ranges are added, she is informed by the linemen. She then calls upon the consumer to assure proper and efficient use of such equipment.

The increase in the number of dairy and poultry farms should result in higher consumption of electricity. Milk coolers, cream separators, and electric milking machines can be expected to add to the energy load. In connection with poultry raising, additional lighting, heating and water pumping facilities will be utilized.

Oil companies are discovering that the use of electricity for oil well pumping is an economical means of pumping the oil out of the ground, and it is expected the future increase in this type of consumer will add greatly to the energy load and revenue.

The trend to larger farm units devoted to cattle raising, poultry, and dairying should increase the income of the farm operators and consequently permit them to add more electrical appliances and equipment than they could previously afford.

D. Conditions in the Area Unfavorable to Increased Use of Electricity

Competition from LP and natural gas is without question the greatest single deterrent to the use of more electrical appliances and a larger energy load among farm and nonfarm consumers.

According to the 1950 Census of Agriculture, 26 percent of the farm operators were tenants. In talking with some of these tenants, the appraiser learned that because they were uncertain how long they would be living at a place where electricity was available, they were reluctant to buy electrical appliances for fear they would not be able to use them in case they moved. Others had been unable to prevail upon their landlords to wire their houses for electricity and did not want to bear that expense themselves, particularly when they were uncertain of their tenure. As more and more houses are wired and served with electricity; landlords will be forced to wire their houses if they wish to have desirable tenants.

In some cases the landlord holds title to the land for its oil and gas potentialities and is only interested in receiving sufficient income from agricultural production to pay the taxes. For this reason some of the soil is being badly "mined", no steps are being taken to replace the fertility of the soil.

IV. CONSUMER CHARACTERISTICS

A. Present Status

The following data were obtained from the system's monthly financial and statistical report for August 1951:

Consumers Class	Number	Average Kwh Consumption	Average Billing
Farm 1/	3,718	98	$4.82
Small Commercial	468	183	7.13
Total	4,186		

1/ Includes rural farm and rural nonfarm. No towns are served.

B. Ultimate Number of Consumers

According to the latest unelectrified farm survey made by the system, the estimated ultimate number of miles to be built is 3,237 to serve 8,255 consumers, a little more than twice the present number of consumers now served. (See Figure II). Included in the list of prospective consumers are: 92 small commercial, 59 oil well pumps and large power, and 332 schools, churches and cabins. Prospective rural residential consumers were divided in the estimate on the same ratio as the present served consumers. These additional consumers are composed of 3,083 farm and 503 nonfarm residential.

C. Variation in Amount of Electricity Expected to Be Used by Consumers

The following is a percentage distribution of consumers according to the amount of electricity they expect to use.

Average Monthly Kwh Consumption	Percent Consumers Farm	Nonfarm
Under 50	17	5
50 - 99	42	36
100 - 199	33	45
200 - 299	8	1
300 - 399	--	10
400 - 499	--	3
500 and over	--	--

These averages should be attained within three years after the field appraisal according to information furnished by the respondents.

D. Major Uses of Electricity by Served Farm and Nonfarm Consumers

The more important kinds of electrical appliances and equipment according to the percentage of total kwh load to be attained within three years after the field appraisal are indicated in Tables IV and V. It should be noted that for farm consumers the appliances shown will account for about 68 percent of the estimated consumption, and for nonfarm, 61 percent. The relationship between this load and the density of appliances that account for it, is shown in Figure III. From this figure it is possible to see in a general way how the total load can be raised through increasing the number of the respective appliances per 100 consumers.

TABLE IV

MAJOR USES OF ELECTRICITY
BY SERVED FARM CONSUMERS

Appliance or Equipment	Estimated Total Kwh	Percent of Total Load
Refrigerators	29,772	17.2
Water Heaters	24,000	13.9
Freezers (Cabinet)	22,770	13.2
Water Pressure Systems	12,966	7.5
Irons	9,730	5.6
Ranges	9,600	5.5
Radios	9,340	5.4

Source: Field Appraisal - Table II

TABLE V

MAJOR USES OF ELECTRICITY BY
SERVED NONFARM RESIDENTIAL CONSUMERS

Appliance or Equipment	Estimated Total Kwh	Percent of Total Load
Freezers (Cabinet)	26,244	20.8
Refrigerators	25,498	20.2
Radios	10,416	8.3
Irons	9,583	7.6
Ranges	5,004	4.0

Source: Field Appraisal - Table III

E. Increase in Consumption Since Energization

The actual kwh consumption of all served farm consumers as shown by the billing record data for 70 of the 75 respondents, is shown below. Billing records for the other five respondents were not included because they were not connected at least six months in one calendar year.

Total No. of Years With Electricity	Number of Schedules	Average Monthly Kwh Consumption by 12-Month Period 1/									
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1	15	60									
2	21	65	74								
3	11	59	68	80							
4	11	59	90	101	126						
5	5	38	39	59	76	100					
6	3	44	67	83	112	137	151				
7	2	26	33	34	36	33	44	45			
8	--	--	--	--	--	--	--	--	--		
9	1	43	28	42	50	69	68	76	85	87	
10	1	47	30	30	33	43	70	36	43	67	38

1/ The first year's usage was determined from the average monthly kwh consumption for consumers connected six or more months at the end of the year. The last year's usage was determined from the average monthly kwh consumption for consumers who had been connected six or more months this year.

With very few exceptions, each group of consumers has shown an increase in average consumption for each year connected. There has been some tendency for new consumers in the later years to start at a higher consumption rate than new consumers in earlier years.

F. Use of Liquid Petroleum Gas in the Area

The use of LP gas in the area is considerable. LP gas dealers have been active and have taken advantage of delays in the building of electric lines. Some farm consumers interviewed are using one or more gas appliances. (See Table VI). A high proportion of served nonfarm residential consumers and unserved farm respondents use, or plan to use, gas. Very few respondents are now planning to change any gas appliances to electrical. Some have changed, and it is reported that a steady increase in the price of LP gas in the past has caused consumers to change to electricity. Rates which this system pays its supplier, the Southwestern Power Administration, permit it to compete favorably with other sources of energy in the area. A promotional rate is in effect to encourage the use of electric ranges and water heaters.

Natural gas is produced in the area and is being used by some farmers. The extent, however, has not been determined but it appears limited to those farmers who have gas wells on their farms and, as part of their leasing arrangements, receive natural gas for household purposes without charge.

TABLE VI

USE OF LIQUID PETROLEUM GAS

	Percent of Consumers		
	Served Farm	Unserved Farm	Served Nonfarm
Using or Planning to Use One or More Gas Appliance			
LP Gas	47	29	21
Natural Gas	16	12	63
Planning to use gas	1	24	4
Total	64	65	88
Gas Appliances Now in Use or Proposed			
Range	59	47	83
Water Heater	17	--	62
Refrigerator	17	35	25
House Heating	51	35	79
Gas Appliances in Use - Users Not Planning to Change to Electricity			
Range	58	41	79
Water Heater	16	--	62
Refrigerator	11	23	25
House Heating	51	35	75
Gas Appliances in Use - Users Planning to Change to Electricity			
Range	1	6	4
Water Heater	1	--	--
Refrigerator	6	12	--
House Heating	--	--	4

Source: Field appraisal completed in September 1951.

V. RELATED ECONOMIC FACTORS

A. Population and Settlement

During the decade 1940-1950, the population in the 6-county area decreased by 27.9 percent. The population of towns, which was about one-third of the total in 1944, decreased only 1.3 percent. Rural population decreased 41.4 percent in 1950 and was 66.3 percent of the total. The decline in the population in the rural areas in this section of the State is believed to be about to cease. While there may be further decreases in the population, many of the bankers and county agents expect the rate of decline to be less and soon stop entirely. However, the number of dwelling units has increased 13 percent.

B. Farm Characteristics

1. Size of Farm

Farms have increased in average size from 146 acres in 1945 to 166 acres in 1950. During the same period the number of farms decreased 15.5 percent. The average size farm for the State of Oklahoma was 219 acres in 1945.

2. Farm Land Utilization

Land utilization in 1944 and 1949 for all land in farms is indicated in the following table:

Land Use	Percent of All Land in Farms 1944	1949
Cropland harvested	31.4	21.3
Cropland, failure	9.7	----
Cropland, idle or fallow	4.1	7.2
Cropland used for pasture	5.2	8.7
Woodland pastured	24.9	25.9
Other land pastured	26.0	25.0
Woodland not pastured	2.3	4.8
Other land (house lots, roads, wasteland, etc.)	5.4	6.3
Irrigated land	---	.8

Of all land in these counties, 78 percent was in farms in 1944, compared to a State figure of 81.6 percent. In 1949, 75 percent of the land area was in farms.

3. Tenancy

In 1945 the rate of tenancy was quite high in the system area. However, only 26 percent of the farms were tenant operated in 1950 compared to 47 percent in 1945.

4. Type of Farming

The system area lies mostly within the "Mixed Prairies and Cross Timbers of Oklahoma." Cotton has been one of the chief sources of agricultural income; however, in 1949 only 8.5 percent of the farms were classified as cotton as the principal source of income. According to the 1945 and 1950 Census of Agriculture, farms classified by principal source of income were as follows:

Principal Income Source	Percent of Farms in Class	
	1944	1949
Fruit and Nuts	.7	.6
Vegetables	.4	.2
Horticultural Specialties	.1	---
Field Crops	40.3	16.8
Dairy	3.8	6.4
Poultry	2.9	1.5
Livestock	7.9	15.4
Forest Products	.1	---
General	16.9	13.6
Subsistence	25.3	---
Unclassified	1.6	45.5

Source: U. S. Census of Agriculture.

This area is experiencing a transition in the type of farming. In Pottawatomie and Seminole Counties the trend is definitely away from cotton. Utilization of the land for the cultivation of cotton is proving uneconomical in the face of superior producing areas where large scale mechanization and irrigation are possible. Other field crops are of lesser importance today than of yesteryear. A shift to dairying, beef cattle, poultry and feed crops, resulting in larger farm units, is taking place. Each year more land is being turned to pasture and forage crops.

In Hughes, McIntosh and Okfuskee Counties cotton is still the major cash crop. In the last ten years the raising of peanuts has grown in importance and now rivals cotton as the leading cash crop; Continued use of the land for growing peanuts without alternating the fields with legumes and other soil building crops, will result in the depletion of soil fertility. This fact is becoming apparent to the farmers and they are paying heed to the warnings of the county agents and other representatives of agriculture programs serving the area.

C. Farm Financial Pattern

1. Value of Land and Buildings

For the six counties in the system area, the 1945 average value of land and buildings per farm was $3,176 compared to $5,699, the average value in 1950. The average for the State was $6,713

in 1944. As yet, the 1949 census data are not available for the State and nation. In 1944 the average value per acre for the area was $21.78 compared to $30.59 for the State. In 1949 the average value per acre was $34.43 for the area.

2. Bank Deposits and Loans

The Rand McNally Banker's Directory lists 24 banks within or near the system boundary. As of December 30, 1951 all these banks together had deposits of over 62 million dollars and loans of almost 19 million dollars, a ratio of deposits to loans of 3.2:1. It is not known just what proportion of the business of these banks is done with farmers.

The credit facilities in this area appear to be adequate and are being used by the farmers. Most of the bankers consider the farmers a good credit risk. Mortgage foreclosures are rare. One banker stated that he could hardly remember the last foreclosure, it had been so long ago. The banks reported that scheduled repayments of loans were being met. Farmers Home Administration operates in the area and has a number of clients.

3. Income

a. Farm Income

Farm income in this area is modest. Those farm operators engaged in dairying have weekly or biweekly milk checks. Other farmers producing livestock and poultry are able to raise cash when the need arises by marketing some of their cattle or chickens. There is a shift from crop farming to more livestock production. This increase in relatively stable income has resulted in repayments of loans on an installment basis. In general, bankers were of the opinion that farmers were in a much better financial condition than at any previous time.

Though most farmers are dependent upon livestock or crops for the major portion of their income, some do receive income from oil and gas rights. Royalty, or mineral rights in the land in most of the area where the oil prospects are considered best, are for the most part owned by others than those farming the land. In other areas independent oil companies and "wildcatters" have leased mineral rights by paying an annual rental fee with a percentage (usually one-eighth of the production) to the person holding the mineral rights. Income from this source is not expected to be high in most cases and the benefits will not be enjoyed by many of those who are now living on the farms.

The average cash farm income for these counties in 1944 was $1,264 compared to the State average of $2,420 and a national average of $3,046. In 1949 the average cash farm income for

these counties was $1,447, an increase of about 14 percent. However, income data for 1949 are not yet available for the State and nation.

Farms classified by total value of agricultural products for counties in the system area were as follows:

Income Class	Farms in Class - 1944		Farms in Class - 1949	
	Percent	Cumulative	Percent	Cumulative
Under $250	7.8	7.8	26.1	26.1
250 - 399	8.4	16.2	10.6	36.7
400 - 599	10.3	26.5	9.8	46.5
600 - 999	17.3	43.8	13.8	60.3
1,000 - 1,499	17.8	61.6	11.5	71.8
1,500 - 2,499	21.4	83.0	12.5	84.3
2,500 - 3,999	10.9	93.9	9.0	93.3
4,000 - 5,999	4.0	97.9	3.6	96.9
6,000 - 9,999	1.4	99.3	1.7	98.6
10,000 and over	.7	100.0	1.4	100.0

Source: U. S. Census of Agriculture

b. Off-farm Employment

Opportunities for off-farm employment are not numerous, though several farm operators do work at Tinker Field at Oklahoma City, others work in Shawnee, Seminole and McAlester. The oil industry does not present much opportunity for employment of farmers on a part-time basis. Little of the oil produced in the area is refined locally, most of it being transported by pipeline to refineries at Tulsa, Ponca City and Bartlesville and elsewhere. In 1944, according to the census, 31 percent of the farm operators reported an average of 155 days off-farm employment. For the State as a whole, 30 percent of the farm operators reported an average of 175 days work off the farm. The Census data for these counties indicate an increase in off-farm employment in 1949. Forty-three percent of the farm operators reported working off farm and 21 percent reported working off farm 100 days or more compared to 17 percent in 1944. In 1949, 38 percent of the farm operators reported other income of family exceeding the value of agricultural products sold.

D. Marketing Outlets and Facilities

Marketing facilities for most of the farm products are adequate. Farmers usually have a choice of several outlets for their cotton, peanuts, corn, livestock and pecans. In the eastern part of the area none of the dairy products consumed within the area is processed locally though consumption is exceeded by milk production. Muskogee, Tulsa, and Oklahoma City draw from this area for part of their dairy needs.

Though there is a ready market for beef cattle and hogs, no processing plants are in the area. Broiler production is on the increase and has surpassed the capacity of processors within the area. The surplus is shipped to processors out of the area which usually results in a loss in weight and income. Additional processing plants within the area are being planned and this is expected to cause a faster growth in the broiler industry.

The area is served by two large railroad companies, the Atchison, Topeka and Santa Fe running north and south, and the Chicago, Rock Island and Pacific running east and west. Two smaller railroad companies, the Oklahoma City, Ada and Atoka Railroad and the Kansas, Oklahoma and Gulf Railroad also serve the area.

Federal and State highways serving the area are considered adequate and are accessible to everyone without traveling excessive distances over local roads. Farm to market roads have been improved and a larger network of such roads is being considered.

Most of the oil and gas produced in the area is transported to refineries through pipelines thereby relieving the roads and railroads of much of this burden.

VI. PHYSICAL CHARACTERISTICS OF THE AREA

A. Topography and Soils

The topography of this area is rolling to very hilly, with some sizeable plateau-like areas and some flat bottom lands. The eastern section of the service area and parts of Hughes and McIntosh Counties contain some quite hilly land. Rich productive soils are found in the bottom lands adjacent to and near the rivers and creeks. The poorer land is found in the eastern section of the service area where it is very hilly. Some timber, mostly scrub oak, blackjack, cottonwood and pecan is found in the area. There is evidence of considerable past erosion. Through the programs sponsored by the Soil Conservation Service, Production and Marketing Administration and others, much headway has been made against the ravages of erosion in Pottawatomie and Seminole Counties and to a lesser degree in the rest of the area. This has been accomplished by increasing the number of farm ponds and relocating others, by constructing a series of small check dams, by contour plowing, rotation of crops and by alternating the cultivation of fields allowing some to lie idle.

B. Natural Resources

This area has long been known for its oil and gas production. Most of the major oil producing companies carry on operations in this section of the State. Estimates from informed sources indicate that there is no concern about the oil or gas reserves being exhausted in the foreseeable future. New wells are being brought in as old ones cease pumping. Many wells have been pumping in this area for over twenty-five years.

Little of the timber in this area, if any at all, can be put to commercial use. Stands of large trees are not great enough to make saw mills feasible. Most of the wood cut is used for fence posts and fire wood. Native pecan trees are cared for by many of the farmers and the harvest of pecans in Lincoln, Pottawatomie and Seminole Counties adds considerable to the farm income.

C. Climate

In the served area the growing season averages about 215 days between killing frosts. Average annual precipitation is about 36 inches, increasing from 33 inches in Pottawatomie County on the west to over 41 inches in McIntosh County on the east. The January average temperature is about 40 degrees, the July average about 82 degrees above zero. The maximum temperature recorded (in Lincoln County) was 119 degrees, with the other counties approaching this record. The Lincoln County station also reported the minimum for the area was -21 degrees. The minimum for the other counties was very little warmer.

This area, as well as all of the southwestern part of the United States, has experienced prolonged droughts in the past which have had their resulting effects on farming. The possibility of irrigation in the future is remote since there is no abundance of ground water and no dams are planned in the area.